

# Dell Vostro 360

## Owner's Manual

Regulatory Model W03C  
Regulatory Type W03C001



# Notes, Cautions, and Warnings



**NOTE:** A NOTE indicates important information that helps you make better use of your computer.



**CAUTION:** A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.



**WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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# Working on Your Computer

## Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or--if purchased separately--installed by performing the removal procedure in reverse order.



**WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).



**CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.



**CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the computer.



**CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.



**CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.



**NOTE:** The color of your computer and certain components may appear differently than shown in this document.

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).



**CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

3. Disconnect all network cables from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets.
5. Press and hold the power button while the computer is unplugged to ground the system board.
6. Remove the cover.



**CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

## Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- Small plastic scribe
- Flash BIOS update program CD

## Turning Off Your Computer



**CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system:
  - In Windows Vista :

Click **Start**  , then click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down**.



- In Windows XP:  
Click **Start** → **Turn Off Computer** → **Turn Off** . The computer turns off after the operating system shutdown process is complete.
- 2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

## After Working Inside Your Computer

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

1. Replace the cover.



**CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.**

2. Connect any telephone or network cables to your computer.
3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.
5. Verify that the computer works correctly by running the Dell Diagnostics.



## Removing The Rear Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the screws that secure the rear cover.



3. Pry the cover away from the computer.



4. Lift the cover away from the computer.



## Installing The Rear Cover

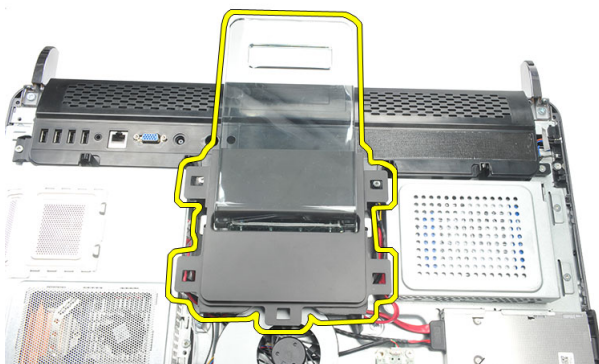
1. Place the rear cover on the chassis.
2. Press down on the rear cover, until it clicks into place.
3. Replace the screws to secure the rear cover to the computer.
4. Follow the procedures in *After Working Inside Your Computer*

## Removing The Rear Stand

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the screws that secure the rear stand to the computer.



4. Pull the rear stand in an upwards direction and remove it from the chassis.



# Installing The Rear Stand

1. Align the rear stand into the chassis and ensure it clicks into place.
2. Tighten the screws to secure the rear stand to the computer.
3. Install the *rear cover*.
4. Follow the procedures in *After Working Inside Your Computer*

## Removing The Front Feet

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the screws that secure the left front foot.



4. Remove the left front foot.



5. Remove the screws that secure the right front foot.



6. Remove the right front foot.

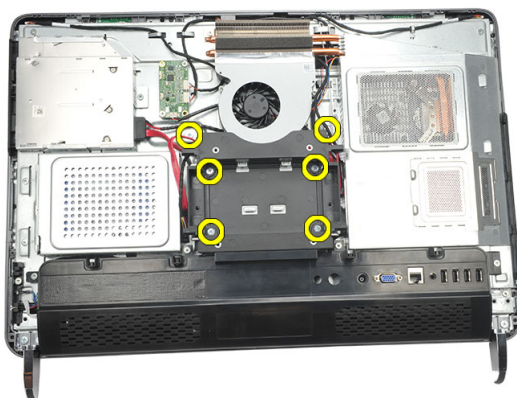


## Installing The Front Feet

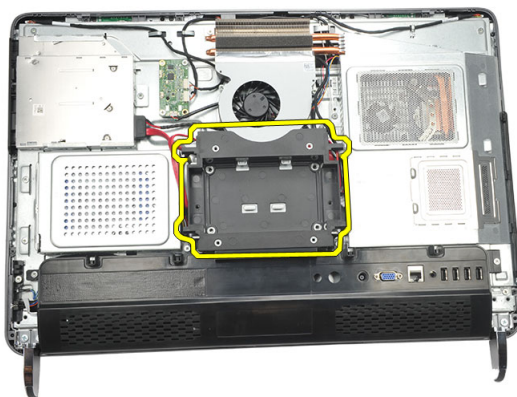
1. Align the front feet to the bottom left and right of chassis.
2. Tighten the screws to secure the left and right front feet.
3. Install the *rear cover*.
4. Follow the procedures in *After Working Inside Your Computer*

# Removing The Rear Stand Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the screws that secure the top and the inside of the rear stand cover.



5. Lift up the rear stand cover and remove it from the computer.

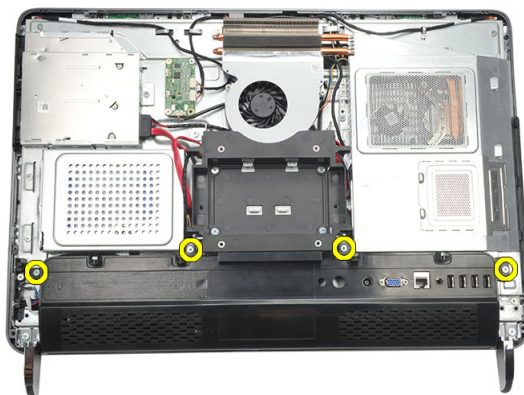


# Installing The Rear Stand Cover

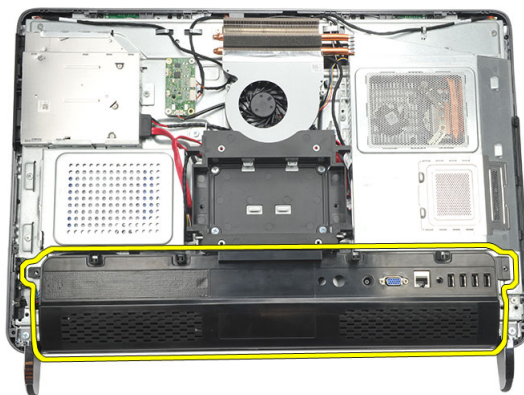
1. Align the rear stand cover on the chassis.
2. Tighten the screws to secure the outside and the inside of the rear stand cover.
3. Install the *rear stand*.
4. Install the *rear cover*.
5. Follow the procedures in *After Working Inside Your Computer*

# Removing The Rear I/O Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the screws that secure the rear I/O cover.



5. Pry the rear I/O cover loose from the chassis and lift it up.

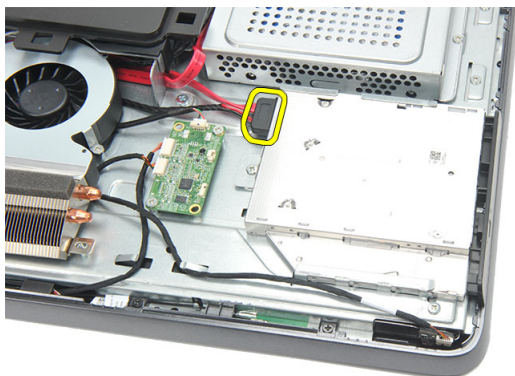


# Installing The Rear Input/Output (I/O) Cover

1. Align and secure the rear I/O cover on the chassis.
2. Tighten the screws to secure the rear I/O cover in place.
3. Install the *rear stand*.
4. Install the *rear cover*.
5. Follow the procedures in *After Working Inside Your Computer*

# Removing The Optical Drive

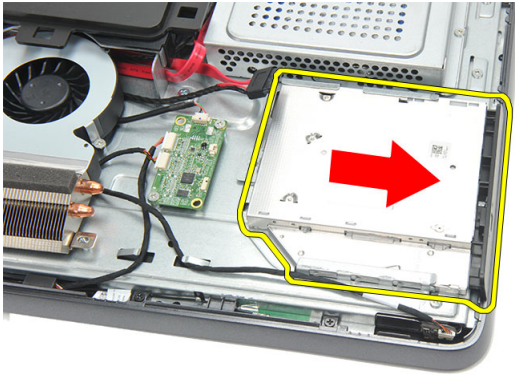
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Disconnect the SATA cable from the optical drive.



4. Remove the screw that secures the optical drive to the chassis.



5. Slide the optical drive out of the computer.



6. Remove the screws that secure the optical-drive holder.



7. Remove the holder from the optical-drive module .



# Installing The Optical Drive

1. Place the holder back on the optical drive and tighten the screw to secure the optical drive.
2. Slide the optical drive back into the computer.
3. Tighten the screw to secure the optical drive to the chassis.
4. Connect the SATA cable to the optical drive.
5. Install the *rear cover*.
6. Follow the procedures in *After Working Inside Your Computer*

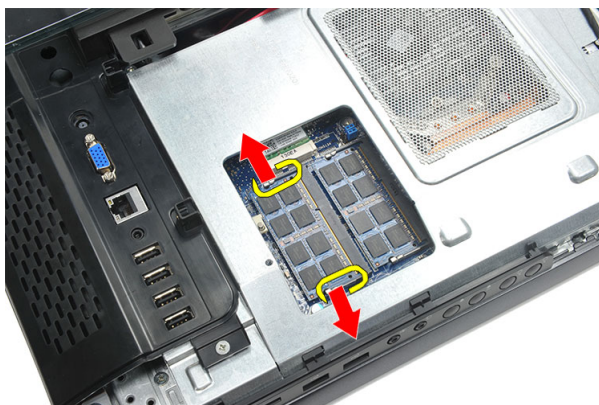


# Removing The Memory Module

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Pry the memory cover and lift it up from the computer.



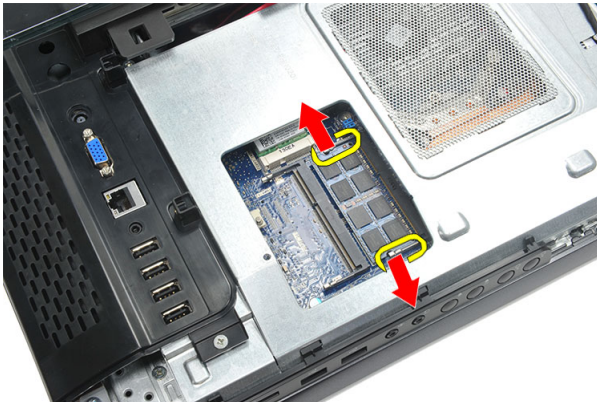
4. Pry the retention clips away from the memory module until it pops up.



5. Remove the memory module from its connector on the computer.



6. Pry the retention clips away from the second memory module until it pops up.



7. Remove the second memory module from its connector on the computer.



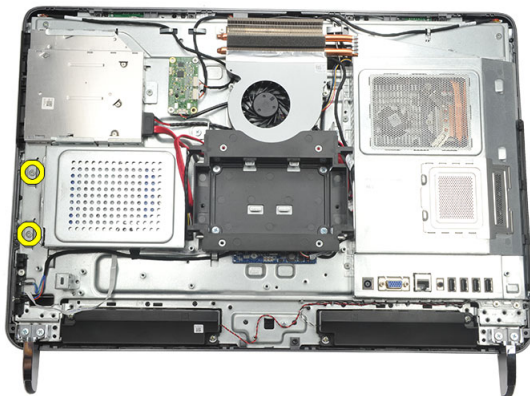
# Installing The Memory Module

1. Insert the memory module into the memory socket.
2. Press the retention clips to secure the memory module in place.
3. Install the *rear cover*.
4. Follow the procedures in *After Working Inside Your Computer*

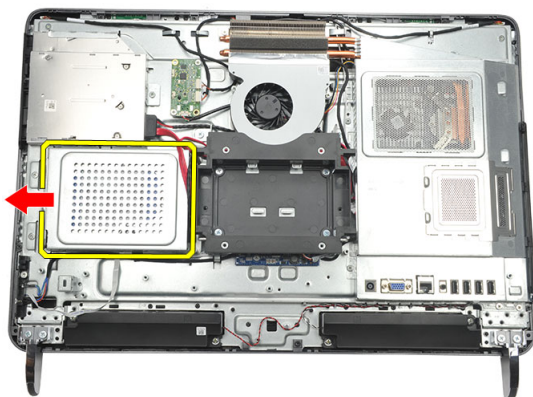


# Removing The Hard Drive Assembly

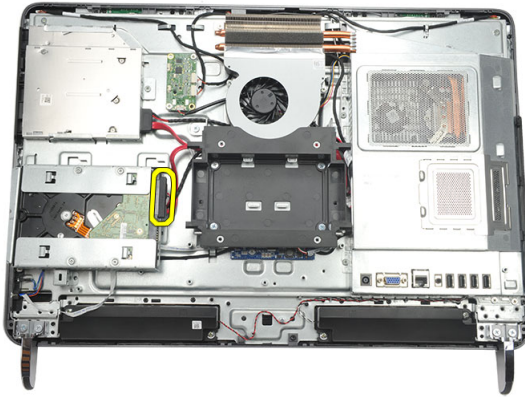
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear I/O cover*.
4. Remove the *rear stand*.
5. Remove the screw that secures the hard-drive bracket to the chassis.



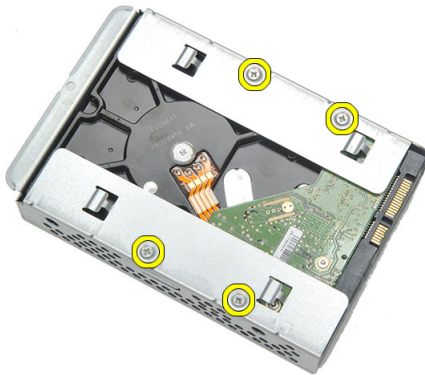
6. Slide the hard-drive bracket towards the outside of the computer to release the tabs from the chassis.



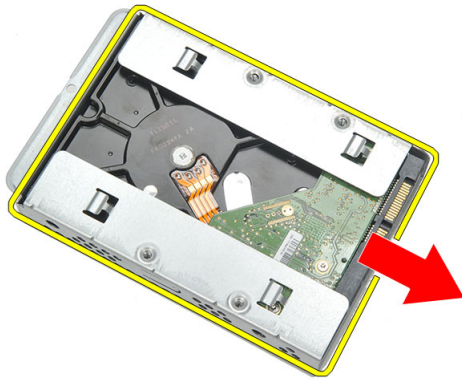
7. Disconnect the hard-drive cable from the hard drive.



8. Lift the hard-drive bracket out of the chassis. Remove the screws that secure the hard-drive cage to the hard drive.



9. Slide the hard drive out from the cage.



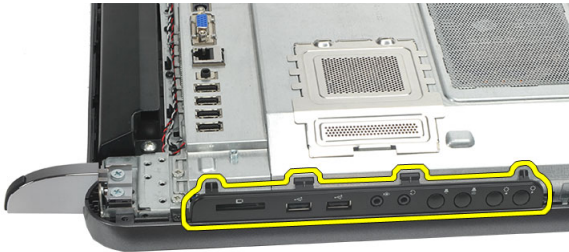
## Installing The Hard Drive

1. Slide the hard drive back into the cage.
2. Replace the screws to secure the hard drive to the hard-drive cage.
3. Slide and push the hard-drive bracket into the chassis to secure it.
4. Tighten the screw to secure the hard-drive bracket to the chassis.
5. Install the *rear stand*.
6. Install the *rear I/O cover*.
7. Install the *rear cover*.
8. Follow the procedures in *After Working Inside Your Computer*.



## Removing The Input/Output Panel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *system board shield*.
6. Remove the I/O panel away from the chassis.



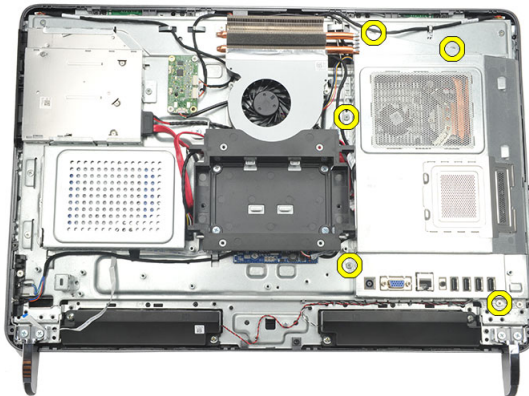
## Installing The Input/Output Panel

1. Place the system board shield on the chassis.
2. Tighten the screws to secure the system board shield.
3. Install the I/O panel securely on the system board shield.
4. Install the *rear I/O cover*.
5. Install the *rear stand*.
6. Install the *rear cover*.
7. Follow the procedures in *After Working Inside Your Computer*.

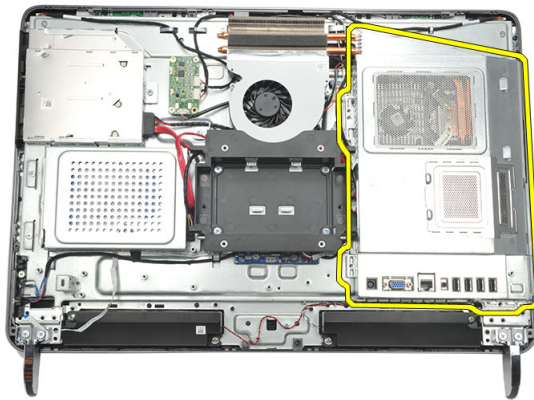


# Removing The System Board Shield

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *I/O panel*.
6. Remove the screws that secure the system board shield.



7. Tilt the system board shield at an angle and remove it from the computer.

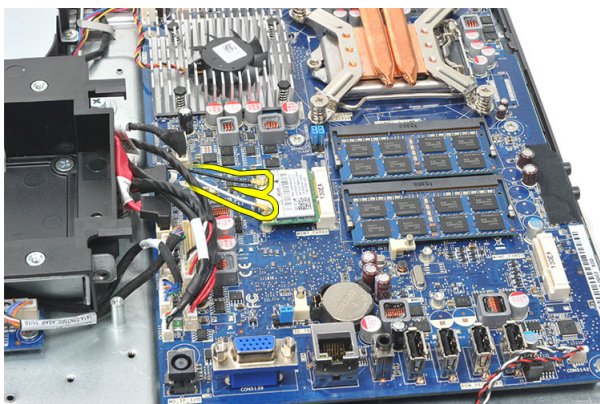


## Installing The System Board Shield

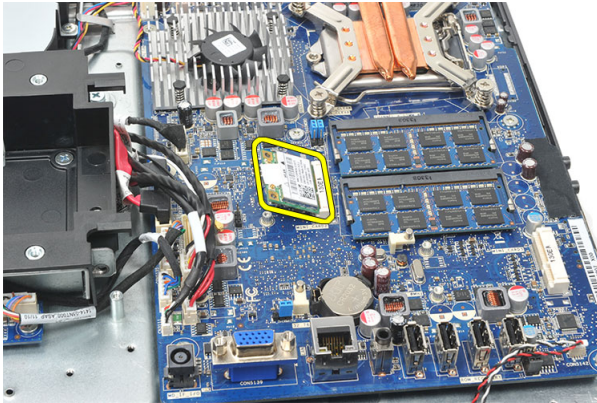
1. Place the system board shield on the chassis.
2. Tighten the screws to secure the system board shield.
3. Install the *I/O panel*.
4. Install the *rear I/O cover*.
5. Install the *rear stand*.
6. Install the *rear cover*.
7. Follow the procedures in *After Working Inside Your Computer*.

# Removing The WLAN Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *system board shield*.
6. Disconnect the antenna cables from the WLAN card.



7. Remove the screw that secures the WLAN card and remove it from the computer.

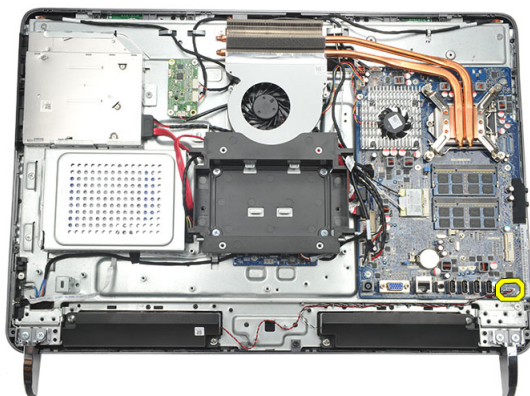


## Installing The WLAN Card

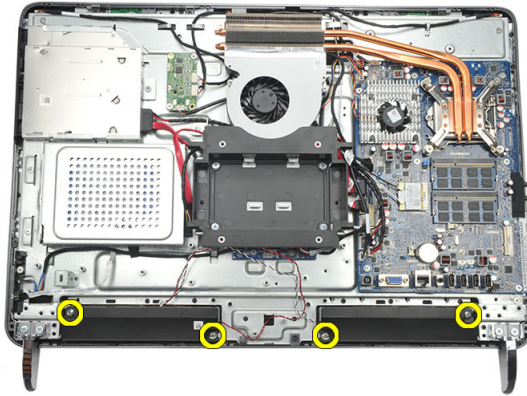
1. Slide the WLAN card into its slot.
2. Tighten the screws to secure the WLAN card in place.
3. Connect the antenna cables according to the color code on the WLAN card.
4. Install the *system board shield*.
5. Install the *rear I/O cover*.
6. Install the *rear stand*.
7. Install the *rear cover*.
8. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Speakers

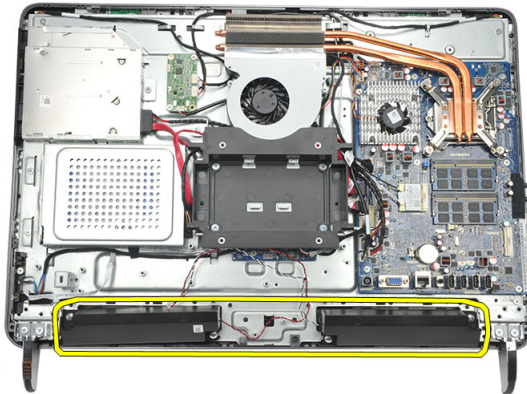
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *system board shield*.
6. Disconnect the speaker cable from the system board.



7. Remove the screws that secure the right and left speakers.



8. Remove the speakers from the computer.

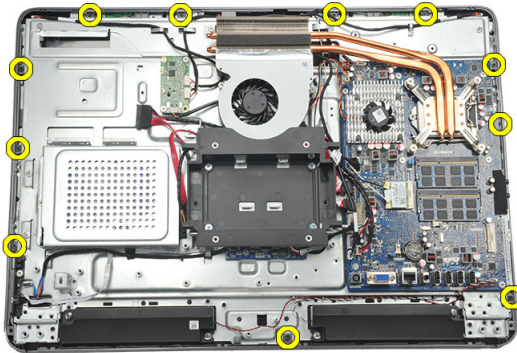


## Installing The Speakers

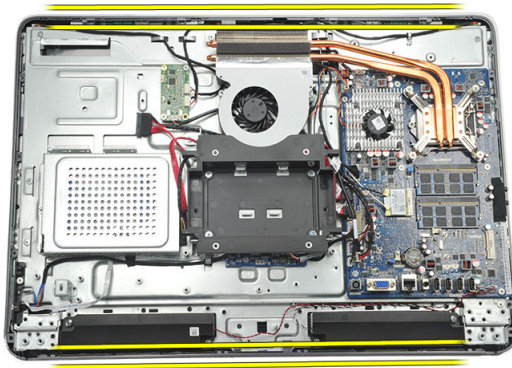
1. Place the speakers on the chassis.
2. Tighten the screws to secure both the speakers in place.
3. Connect the speaker cable to the system board.
4. Install the *system board shield*.
5. Install the *rear I/O cover*.
6. Install the *rear stand*.
7. Install the *rear cover*.
8. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Middle Frame

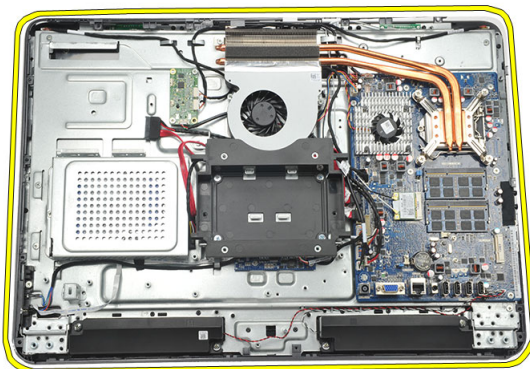
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *front foot*.
6. Remove the *optical drive*.
7. Remove the screws that secure the middle frame.



8. Pry the middle frame loose from the chassis.



9. Remove the middle frame from the computer.



## Installing The Middle Frame

1. Place the middle frame on the chassis.
2. Secure the clips until all of them snap on to the chassis.
3. Tighten the screws to secure the middle frame.
4. Install the *optical drive*.
5. Install the *front feet*.
6. Install the *rear I/O cover*.
7. Install the *rear stand*.
8. Install the *rear cover*.
9. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Touch-Control Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Disconnect the connector cables from the touch-control board.



**NOTE:** The touch-control board and the cable are part of the display Panel assembly.



4. Remove the screws that secure the touch-control board.



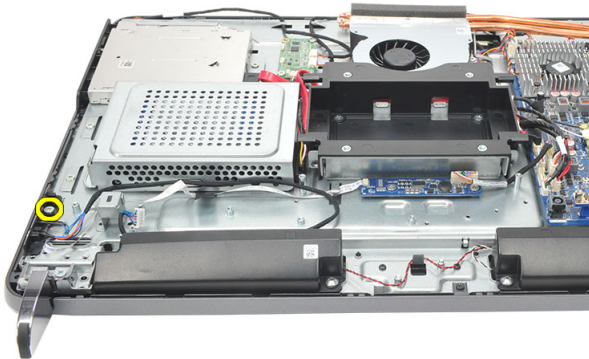
5. Lift the touch-control board from the chassis.

## Installing The Touch-Control Board

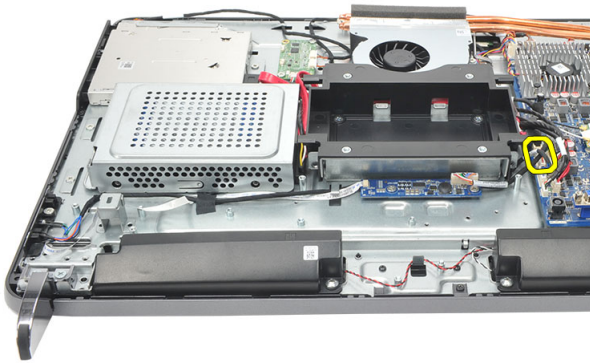
1. Place the touch-control board on the chassis.
2. Tighten the screws to secure the touch-control board.
3. Connect the connector cables into place on the touch-control board.
4. Install the *rear cover*.
5. Follow the procedures in *After Working Inside Your Computer*

# Removing The Power-Switch Assembly

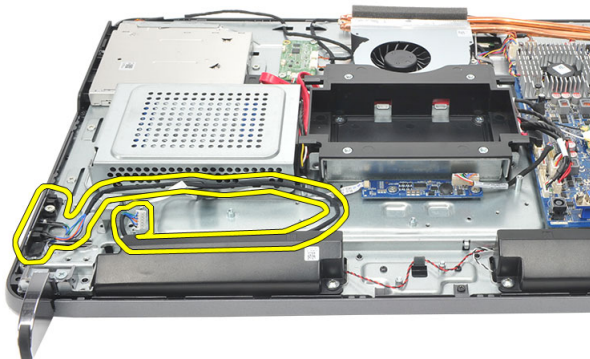
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the screw that secures the power-switch assembly to the chassis.



6. Disconnect the power-switch assembly from the system board.



7. Disengage the cable from the chassis clips and remove the power-switch assembly.

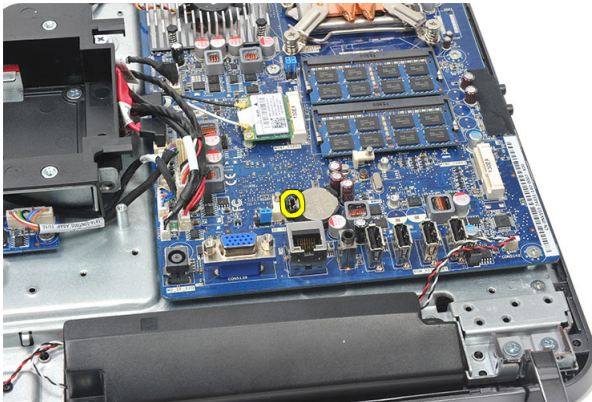


## Installing The Power-Switch Assembly

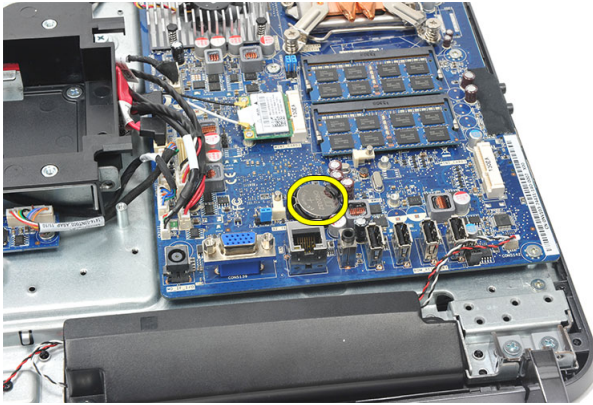
1. Place the power-switch assembly on the chassis.
2. Connect the power-switch assembly cable to the system board and thread the cables into the chassis clips.
3. Tighten the screw that secures the power-switch assembly to the chassis.
4. Install the *rear I/O cover*.
5. Install the *rear stand*.
6. Install the *rear cover*.
7. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Coin-Cell Battery

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *system board shield*.
6. Pry the tabs that secure the coin-cell battery to the system board.



7. Remove the coin-cell battery from its socket.

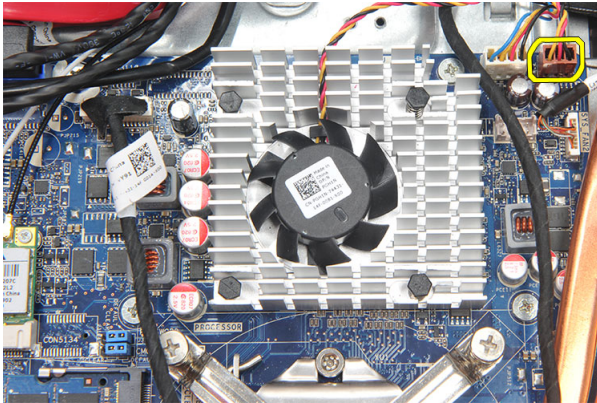


## Installing The Coin-Cell Battery

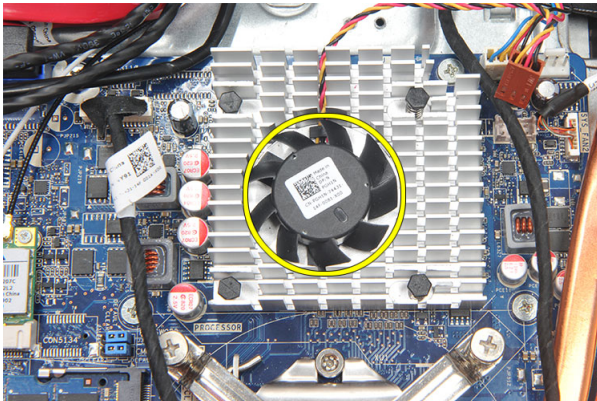
1. Insert the coin-cell battery into the slot.
2. Install the *system board shield*.
3. Install the *rear I/O cover*.
4. Install the *rear stand*.
5. Install the *rear cover*.
6. Follow the procedures in *After Working Inside Your Computer*.

- 

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8. Lift and remove the heatsink fan from the computer.

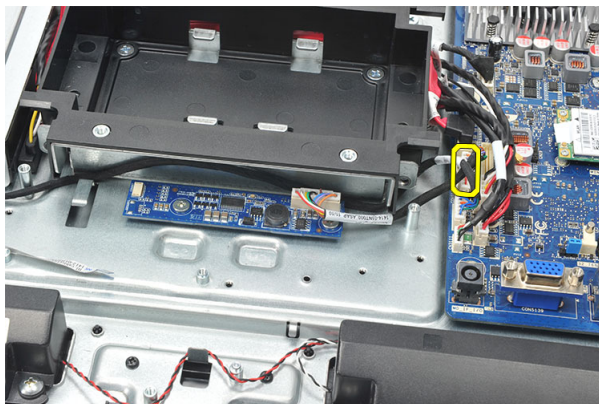


## Installing The Heatsink Fan

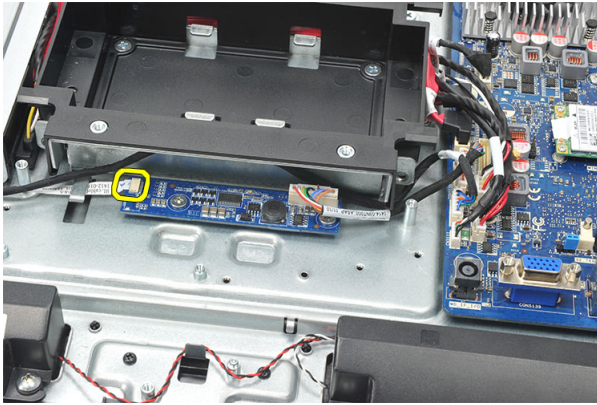
1. Install the heatsink fan on the chassis.
2. Tighten the screws to secure the heatsink fan to the chassis.
3. Connect the heatsink fan connector to its socket on the system board.
4. Install the *system board shield*.
5. Install the *rear I/O cover*.
6. Install the *rear stand*.
7. Install the *rear cover*.
8. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Converter Board

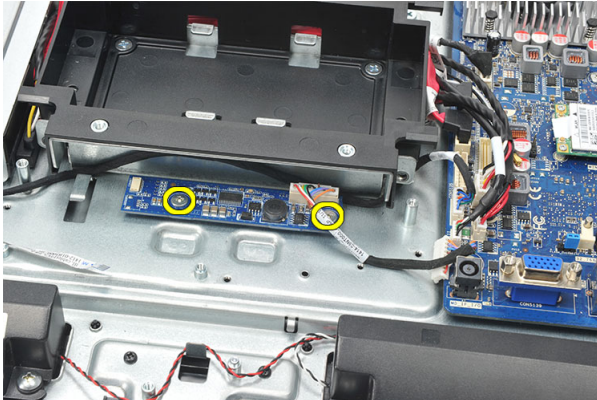
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *system board shield*.
7. Disconnect the power cable from the system board.



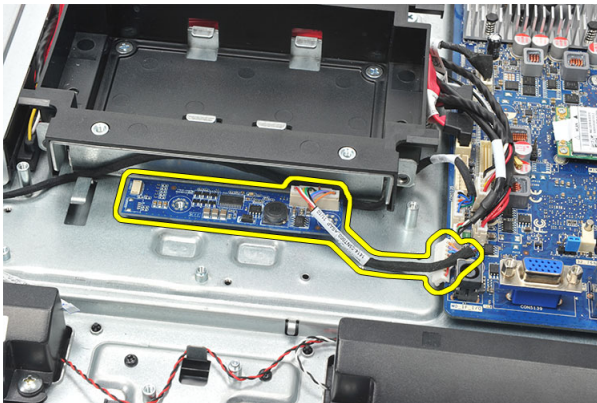
8. Remove the white cable from the connector on the converter board.



9. Remove the screws that secure the converter board.



10. Lift up and remove the converter board from the computer.



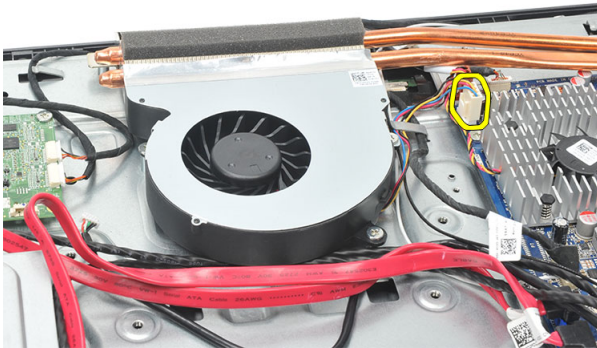
# Installing The Converter Board

1. Install the screws to secure the converter board.
2. Insert the white cable into the connector on the converter board.
3. Install the *system board shield*.
4. Install the *rear stand cover*.
5. Install the *rear I/O cover*.
6. Install the *rear stand*.
7. Install the *rear cover*.
8. Follow the procedures in *After Working Inside Your Computer*.

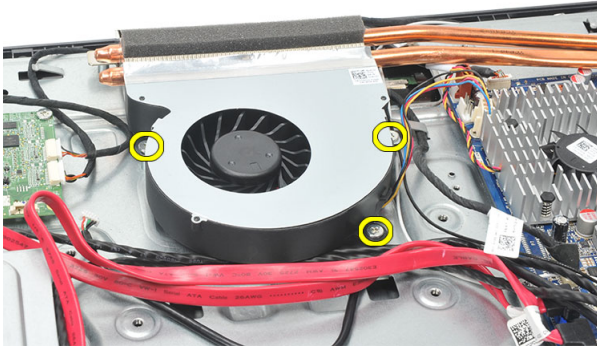


# Removing The CPU Fan

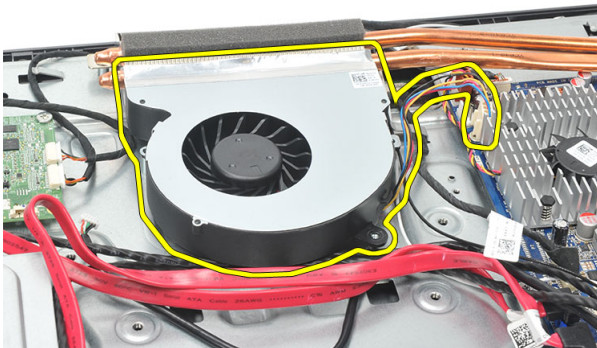
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *system board shield*.
7. Disconnect the CPU-fan cable.



8. Remove the screws that secure the CPU fan to the chassis.



9. Peel the tape sealing the CPU fan to the heat sink and remove the CPU fan from the system.

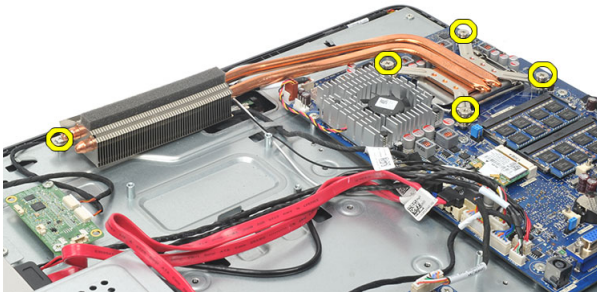


## Installing The CPU Fan

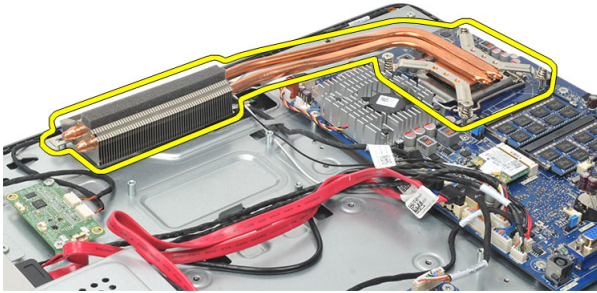
1. Install the screws to secure the CPU fan to the chassis.
2. Secure the tape sealing the CPU fan to the heatsink.
3. Connect the CPU fan connector to the system board.
4. Install the *system board shield*.
5. Install the *rear stand cover*.
6. Install the *rear I/O cover*.
7. Install the *rear stand*.
8. Install the *rear cover*.
9. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Heatsink

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *system board shield*.
7. Remove the *CPU fan*.
8. Remove the screw that secures the heatsink to the chassis, and remove the screws that secure the heatsink to the system board.



9. Remove the heatsink from the computer.

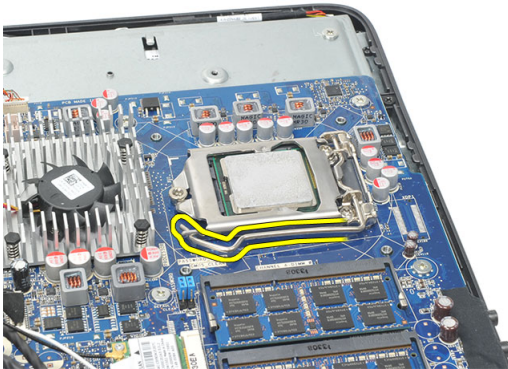


## Installing The CPU Heatsink

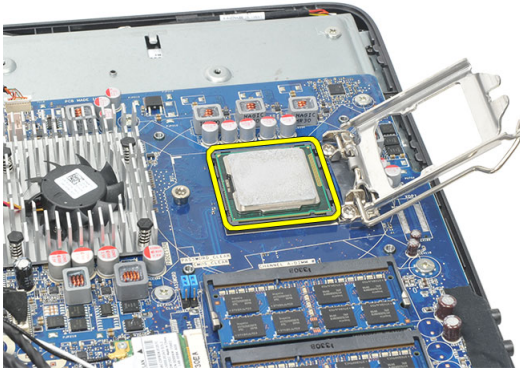
1. Place the CPU heatsink into the chassis.
2. Tighten the screws to secure the CPU heatsink to the system board, and also tighten the screw that secures the heatsink to the chassis.
3. Install the *CPU fan*.
4. Install the *system board shield*.
5. Install the *rear stand cover*.
6. Install the *rear I/O cover*.
7. Install the *rear stand*.
8. Install the *rear cover*.
9. Follow the procedures in *After Working Inside Your Computer*.

# Removing The Processor

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *system board shield*.
7. Remove the *CPU fan*.
8. Remove the *CPU heatsink*.
9. Press the release lever down and then move it outward to release it from the retention hook that secures it.



10. Lift the processor cover and remove the processor from the socket. Place it in an antistatic packaging.

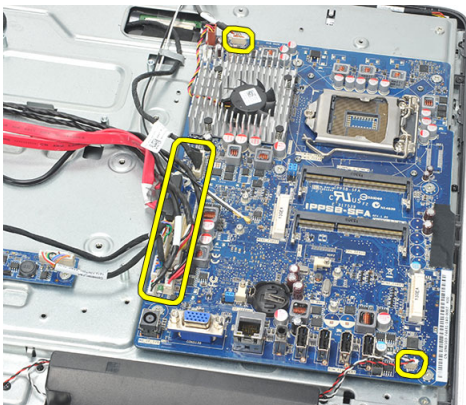


## Installing The Processor

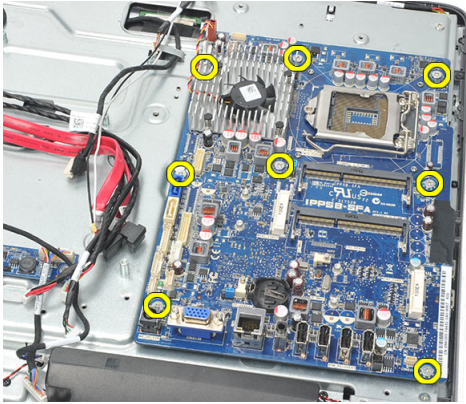
1. Insert the processor into the processor socket. Ensure the processor is properly seated.
2. Lower the processor cover.
3. Press the release lever down and then move it inward to secure it with the retention hook.
4. Install the *CPU heatsink*.
5. Install the *CPU fan*.
6. Install the *system board shield*.
7. Install the *rear stand cover*.
8. Install the *rear I/O cover*.
9. Install the *rear stand*.
10. Install the *rear cover*.
11. Follow the procedures in *After Working Inside Your Computer*.

# Removing The System Board

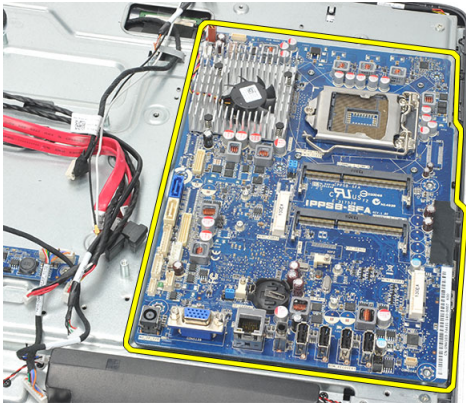
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *system board shield*.
7. Remove the *CPU fan*.
8. Remove the *CPU heatsink*.
9. Remove the *memory module*.
10. Remove the *WLAN card*.
11. Remove the *coin-cell battery*.
12. Remove the *processor*.
13. Disconnect all the cables connected to the system board.



14. Remove the screws that secure the system board to the chassis.



15. Lift the system board out of the chassis and remove it from the computer.



## Installing The System Board

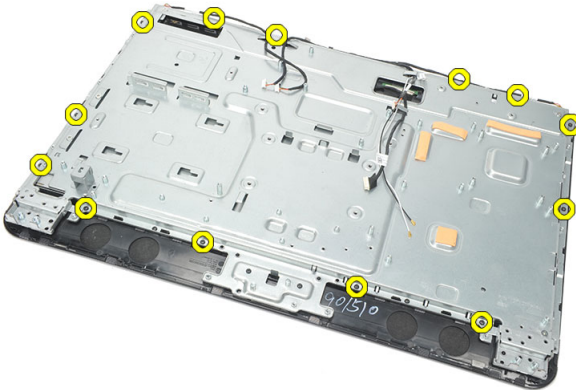
1. Align the system board to the chassis and place it on the chassis.
2. Install the screws that secure the system board to the chassis.
3. Connect the cables to the system board.
4. Install the *processor*.
5. Install the *coin-cell battery*.
6. Install the *WLAN card*.
7. Install the *memory module*.
8. Install the *CPU heatsink*.
9. Install the *CPU fan*.
10. Install the *system board shield*.

11. Install the *rear stand cover*.
12. Install the *rear I/O cover*.
13. Install the *rear stand*.
14. Install the *rear cover*.
15. Follow the procedures in *After Working Inside Your Computer*.

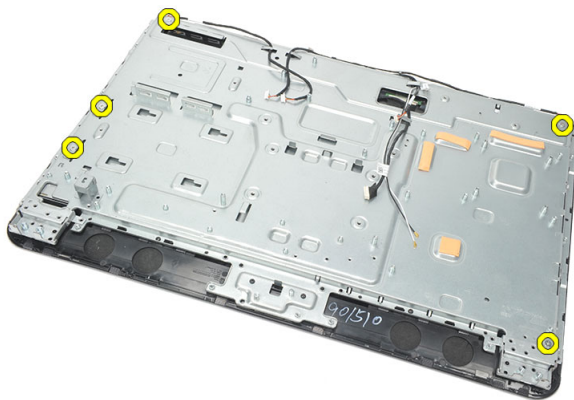


# Removing The Tempan

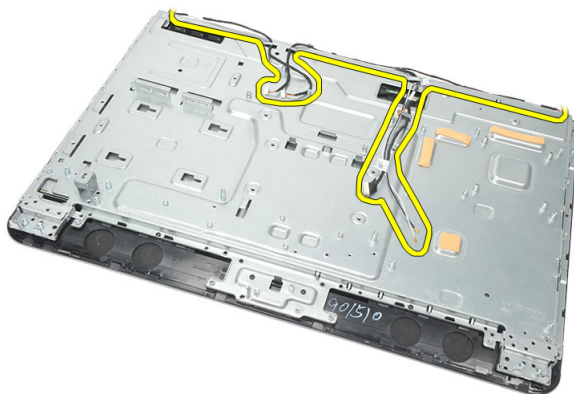
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear stand cover*.
5. Remove the *rear I/O cover*.
6. Remove the *middle frame*.
7. Remove the *hard drive cage and the hard drive*.
8. Remove the *optical drive*.
9. Remove the *system board shield*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *speakers*.
14. Remove the *converter board*.
15. Remove the *power switch assembly*.
16. Remove the *touch control board*.
17. Remove the black screws that secure the tempan to the chassis.



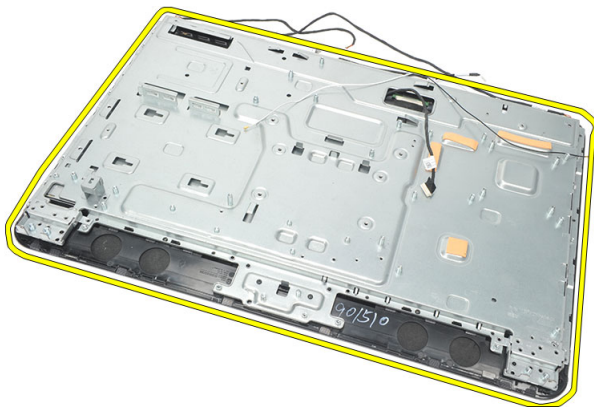
18. Remove the silver screws that secure the tempan to the chassis.



19. Unthread the cables from the chassis clips.



20. Slide the tempan out from the chassis and remove it.



# Installing The Tempan

1. Place the tempan on the chassis.
2. Thread the cables back in their place and ensure they are secured into the chassis clips.
3. Tighten the silver and the black screws that secure the tempan to the chassis.
4. Install the *touch control board*.
5. Install the *power switch assembly*.
6. Install the *converter board*.
7. Install the *speakers*.
8. Install the *system board*.
9. Install the *CPU heatsink*.
10. Install the *CPU fan*.
11. Install the *system board shield*.
12. Install the *optical drive*.
13. Install the *hard drive cage and hard drive*.
14. Install the *middle frame*.
15. Install the *rear I/O cover*.
16. Install the *rear stand cover*.
17. Install the *rear stand*.
18. Install the *rear cover*.
19. Follow the procedures in *After Working Inside Your Computer*.

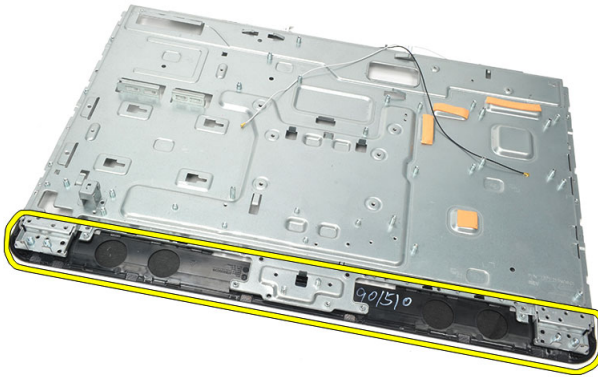


# Removing The Speaker Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear stand cover*.
5. Remove the *rear I/O cover*.
6. Remove the *front foot*.
7. Remove the *middle frame*.
8. Remove the *optical drive*.
9. Remove the *speakers*.
10. Remove the screws that secure the speaker cover to the chassis.



11. Pry the speaker cover loose from the chassis and remove it.



## Installing The Speaker Cover

1. Place the speaker cover on the chassis.
2. Tighten the screws to secure the speaker cover to the chassis.
3. Install the *speakers*.
4. Install the *optical drive*.
5. Install the *middle frame*.
6. Install the *front feet*.
7. Install the *rear I/O cover*.
8. Install the *rear stand*.
9. Install the *rear cover*.
10. Follow the procedures in *After Working Inside Your Computer*.

## Removing The Front Bezel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *middle frame*.
7. Remove the *system board shield*.
8. Remove the *hard drive cage and the hard drive*.
9. Remove the *optical drive*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *tempan*.
14. Remove the *speakers*.
15. Remove the *speaker cover*.
16. Remove the screws (marked with an arrow) that secure the front bezel to the display panel.



17. Lift the chassis off the front bezel.



## Installing The Front Bezel

1. Place the front bezel on the chassis.
2. Hold the assembly together.
3. Tighten the screws to secure the front bezel to the display panel.
4. Install the *speaker cover*.
5. Install the *speakers*.
6. Install the *tempan*.
7. Install the *system board*.
8. Install the *CPU heatsink*.
9. Install the *CPU fan*.
10. Install the *optical drive*.
11. Install the *hard drive cage and hard drive*.
12. Install the *system board shield*.
13. Install the *middle frame*.
14. Install the *rear stand cover*.
15. Install the *rear I/O cover*.
16. Install the *rear stand*.
17. Install the *rear cover*.
18. Follow the procedures in *After Working Inside Your Computer*.

## Removing The Low-Voltage Differential Signaling (LVDS) Cable

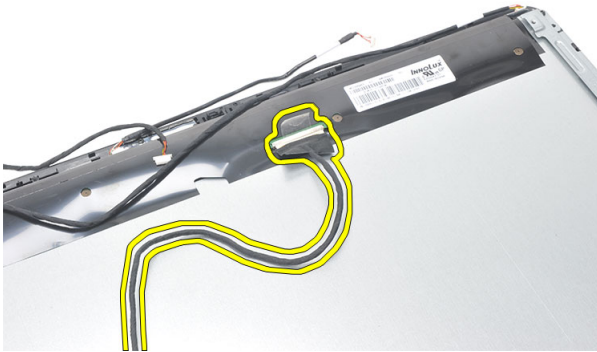
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *middle frame*.
7. Remove the *system board shield*.
8. Remove the *hard drive cage and the hard drive*.
9. Remove the *optical drive*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *tempan*.
14. Pry up the front of the display panel on a soft pad so that the touch cameras are off the table.



15. Peel back the plastic tape that secures the connector.



16. Disconnect the LVDS cable from its connector and remove it from the computer.



## Installing The Low-Voltage Differential Signaling (LVDS) Cable

1. Connect the LVDS cable to its connector.
2. Secure the plastic tape that connects the LVDS cable to the chassis.
3. Install the *tempan*.
4. Install the *system board*.
5. Install the *CPU heatsink*.
6. Install the *CPU fan*.
7. Install the *optical drive*.
8. Install the *hard drive cage and hard drive*.
9. Install the *system board shield*.

10. Install the *middle frame*.
11. Install the *rear stand cover*.
12. Install the *rear I/O cover*.
13. Install the *rear stand*.
14. Install the *rear cover*.
15. Follow the procedures in *After Working Inside Your Computer*.



# Removing The Display Panel



**NOTE:** The touch-control board and the cable are a part of the Display Panel assembly.

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *middle frame*.
7. Remove the *system board shield*.
8. Remove the *hard drive cage and the hard drive*.
9. Remove the *optical drive*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *speakers*.
14. Remove the *speaker cover*.
15. Remove the *front bezel*.
16. Remove the *LVDS cable*.
17. Remove the *tempan*.
18. Remove the screws from each side and remove the display brackets.



## Installing The Display Panel

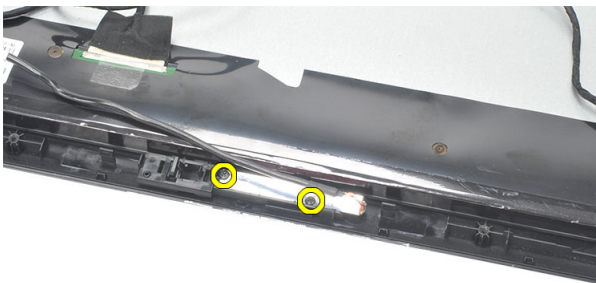


**NOTE:** While replacing the Display Panel, remove the display brackets from the old Display Panel assembly and install it on the new Display Panel Assembly.

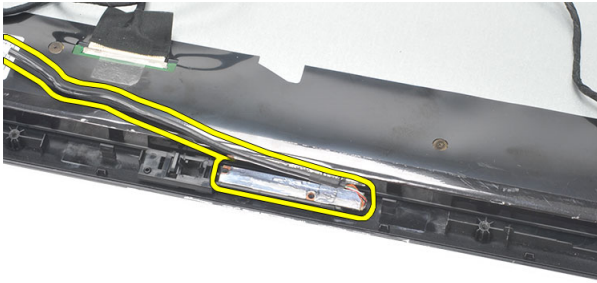
1. Install the screws for both the railings that connect to the display panel.
2. Attach the front bezel and the LVDS cable back to the display panel.
3. Install the *tempan*.
4. Install the *LVDS cable*.
5. Install the *front bezel*.
6. Install the *speaker cover*.
7. Install the *speakers*.
8. Install the *system board*.
9. Install the *CPU heatsink*.
10. Install the *CPU fan*.
11. Install the *optical drive*.
12. Install the *hard drive cage and hard drive*.
13. Install the *system board shield*.
14. Install the *middle frame*.
15. Install the *rear stand cover*.
16. Install the *rear I/O cover*.
17. Install the *rear stand*.
18. Install the *rear cover*.
19. Follow the procedures in *After Working Inside Your Computer*.

## Removing The Webcam

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *middle frame*.
7. Remove the *system board shield*.
8. Remove the *hard drive cage and the hard drive*.
9. Remove the *optical drive*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *speakers*.
14. Remove the *speaker cover*.
15. Remove the *front bezel*.
16. Remove the *tempan*.
17. Remove the screws that secure the webcam.



18. Remove the webcam along with its cable.

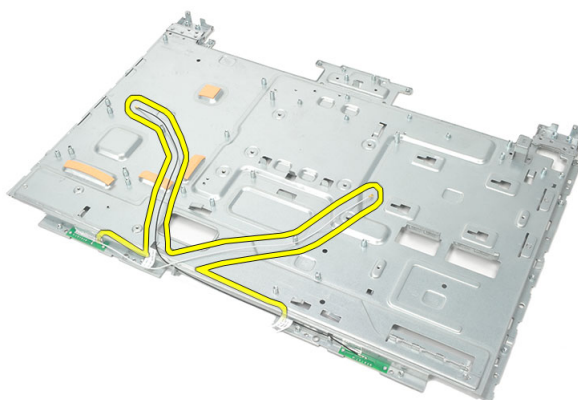


## Installing The Webcam

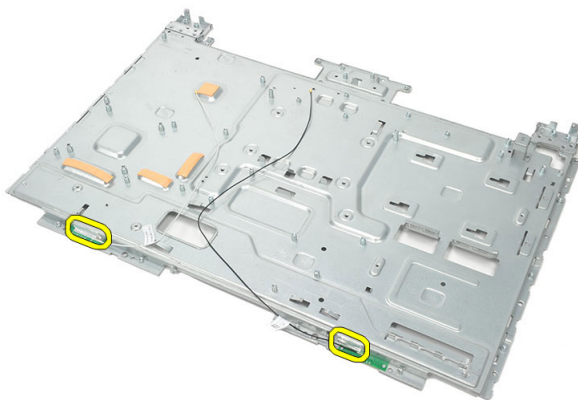
1. Place the webcam on the chassis.
2. Tighten the screws to secure the webcam to the chassis.
3. Connect the webcam cable to the system board after installation.
4. Install the *tempan*.
5. Install the *front bezel*.
6. Install the *speaker cover*.
7. Install the *speakers*.
8. Install the *system board*.
9. Install the *CPU heatsink*.
10. Install the *CPU fan*.
11. Install the *optical drive*.
12. Install the *hard drive cage and hard drive*.
13. Install the *system board shield*.
14. Install the *middle frame*.
15. Install the *rear stand cover*.
16. Install the *rear I/O cover*.
17. Install the *rear stand*.
18. Install the *rear cover*.
19. Follow the procedures in *After Working Inside Your Computer*.

## Removing The Antenna

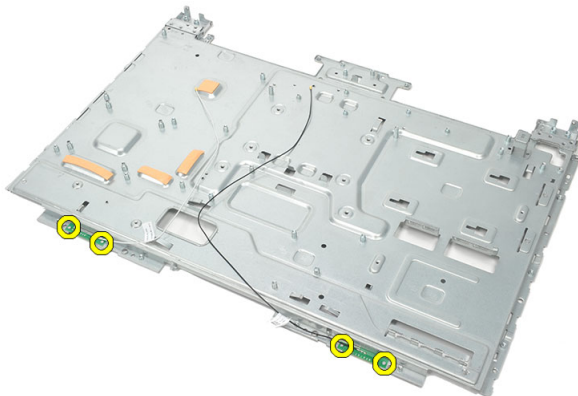
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the *rear cover*.
3. Remove the *rear stand*.
4. Remove the *rear I/O cover*.
5. Remove the *rear stand cover*.
6. Remove the *middle frame*.
7. Remove the *system board shield*.
8. Remove the *hard drive cage and the hard drive*.
9. Remove the *optical drive*.
10. Remove the *CPU fan*.
11. Remove the *CPU heatsink*.
12. Remove the *system board*.
13. Remove the *speakers*.
14. Remove the *speaker cover*.
15. Remove the *tempan*.
16. Remove the cables from the chassis clips.



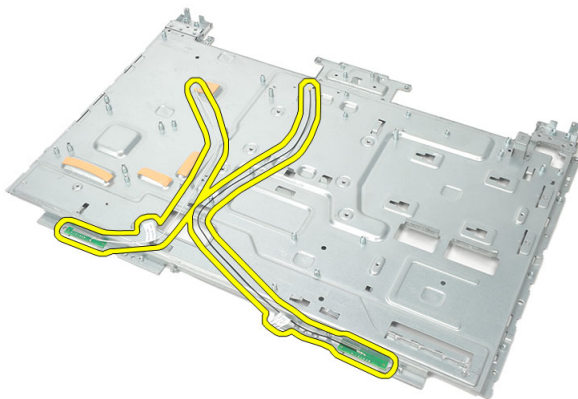
17. Remove the aluminium conducting tape that secure the antennae.



**18.** Remove the screws that secure each antenna.



**19.** Lift up the antennae with its cables.



# Installing The Antenna

1. Place both the antennae on the chassis.
2. Install the screws to secure each of the antennae.
3. Install the securing tape onto each of the antennae.
4. Route the cables into the chassis clips.
5. Install the *tempan*.
6. Install the *speaker cover*.
7. Install the *speakers*.
8. Install the *system board*.
9. Install the *CPU heatsink*.
10. Install the *CPU fan*.
11. Install the *optical drive*.
12. Install the *hard drive cage and hard drive*.
13. Install the *system board shield*.
14. Install the *middle frame*.
15. Install the *rear stand cover*.
16. Install the *rear I/O cover*.
17. Install the *rear stand*.
18. Install the *rear cover*.
19. Follow the procedures in *After Working Inside Your Computer*.



# System Setup Overview

System Setup allows you to:

- change the system configuration information after you add, change, or remove any hardware in your computer.
- set or change a user-selectable option such as the user password.
- read the current amount of memory or set the type of hard drive installed.

Before you use System Setup, it is recommended that you write down the System Setup screen information for future reference.



**CAUTION:** Unless you are an expert computer user, do not change the settings for this program. Certain changes can cause your computer to work incorrectly.

## Entering System Setup

1. Turn on (or restart) your computer.
2. When the blue DELL logo is displayed, you must watch for the F2 prompt to appear.
3. Once the F2 prompt appears, press <F2> immediately.



**NOTE:** The F2 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it to display, and then press <F2> . If you press <F2> before you are prompted, this keystroke will be lost.

4. If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then, shut down your computer and try again.


## System Setup Screens

**Menu** — Appears on top of the **System Setup** window. This field provides a menu to access the System Setup options. Press < Left Arrow > and < Right Arrow > keys to navigate. As a **Menu** option is highlighted, the **Options List** lists the options that define the hardware installed on your computer.

**Options List** — Appears on the left side of the **System Setup** window. The field lists features that define the configuration of your computer, including installed hardware, power conservation, and security features. Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the **Options Field** displays the option's current and available settings.

**Options Field** — Appears on the right side of **Options List** and contains information about each option listed in the **Options List**. In this field you can view information about your computer and make changes to your current settings. Press <Enter> to make changes to your current settings. Press <ESC> to return to the **Options List**.

**Help** — Appears on the right side of the **System Setup** window and contains help information about the option selected in **Options List**.

 **NOTE:** Not all settings listed in the Options Field are changeable.

**Key Functions** — Appears below the **Options Field** and lists keys and their functions within the active system setup field.

Use the following keys to navigate through the System Setup screens:

| Keystroke                         | Action   |
|-----------------------------------|--|
| < F2 >                            | Displays information on any selected item in the System Setup.                                 |
| < Esc >                           | Exit from current view or switch the current view to the <b>Exit</b> page in the System Setup. |
| < Up Arrow > or < Down Arrow >    | Select an item to display.   |
| < Left Arrow > or < Right Arrow > | Select a menu to display.  |
| - or +                            | Change existing item value.  |
| < Enter >                         | Select the sub menu or execute command.  |
| < F9 >                            | Load setup default.  |
| < F10 >                           | Save current configuration and exit System Setup.  |

# System Setup Options

## Main

The Main tab lists out the primary hardware features of the computer. The table below defines the function of each option.

|                              |   |
|------------------------------|---|
| <b>System Information</b>    | Displays the computer model number.                       |
| <b>BIOS Version</b>          | Displays the BIOS revision.                               |
| <b>System Date</b>           | Re-sets the date on the computer's internal calendar.     |
| <b>System Time</b>           | Re-sets the time on the computer's internal clock.        |
| <b>Service Tag</b>           | Displays the service tag of your computer.                |
| <b>Asset Tag</b>             | Displays the asset tag of your computer.                  |
| <b>Processor Information</b> |   |
| <b>Processor Type</b>        | Displays the type of processor.                           |
| <b>L2 Cache Size</b>         | Displays the processor L2 cache size.                     |
| <b>L3 Cache Size</b>         | Displays the processor L3 cache size.                     |
| <b>Memory Information</b>    |   |
| <b>Memory Installed</b>      | Displays the total computer memory.                       |
| <b>Memory Speed</b>          | Displays the memory speed.                                |
| <b>Memory Technology</b>     | Displays the type and technology.                         |
| <b>Device Information</b>    |   |
| <b>SATA 0</b>                | Displays the model number and capacity of the hard drive. |
| <b>SATA 1</b>                | Displays the model number and capacity of the hard drive. |

## Advanced

The Advanced tab allows you to set various functions that affect the performance of the computer. The table below defines the function of each option and its default value.

### CPU Configuration

---

|  |   |                  |
|--|---|------------------|
| <b>Multi Core Support</b>              | Displays the number of active cores.                | Default: All     |
| <b>Limit CPUID Value</b>               | Enable or disable the Limit CPUID Value feature.    | Default: Enabled |
| <b>CPU XD Support</b>                  | Enable or disable the CPU XD feature.               | Default: Enabled |
| <b>Intel Virtualization Technology</b> | Enable or disable the Intel Virtualization feature. | Default: Enabled |
| <b>Intel SpeedStep</b>                 | Enable or disable the Intel SpeedStep feature.      | Default: Enabled |

### System Configuration

---

|                                 |   |                   |
|---------------------------------|---|-------------------|
| <b>Onboard Audio Controller</b> | Enable or disable the onboard audio controller.                 | Default: Enabled  |
| <b>Onboard LAN Controller</b>   | Enable or disable the onboard LAN controller.                   | Default: Enabled  |
| <b>Onboard LAN Boot ROM</b>     | Enable or disable the onboard LAN boot ROM.                     | Default: Disabled |
| <b>SATA Mode</b>                | Allows you to choose the SATA operation mode.                   | Default: AHCI     |
| <b>USB Controller</b>           | Enable or disable the USB controller.                           | Default: Enabled  |
| <b>DVMT/FIXED Memory</b>        | Displays the total amount of DVMT/FIXED memory on the computer. |                   |

## Power Management

---

|                       |   |                    |
|-----------------------|---|--------------------|
| <b>AC Recovery</b>    | Allows the computer to restore the AC power Loss.         | Default: Power Off |
| <b>Remote Wake up</b> | Allows the computer to be remotely turned on.             | Default: Enabled   |
| <b>Auto Power On</b>  | Enable or disable the computer to power on automatically. | Default: Disabled  |

## Post Behavior

---

|                              |  |                  |
|------------------------------|--|------------------|
| <b>NumLock Key</b>           | Enable or disable the NumLock State light during POST.                   | Default: On      |
| <b>Keyboard Error Report</b> | Enable or disable the Keyboard Error Report to be displayed during POST. | Default: Enabled |

## Security

The Security tab displays the security status and allows you to manage the security features of the computer.

|                              |  |
|------------------------------|--|
| <b>Admin Password Status</b> | Specifies whether an admin password has been assigned. |
| <b>Set Admin Password</b>    | Allows you to set an admin password.                   |
| <b>HDD Protection</b>        | Allows you to set a Hard Drive password.               |

## Boot

The Boot tab allows you to change the boot sequence.

## Exit

This section allows you to save, discard, and load default settings before exiting from System Setup.



# Diagnostic Error Messages

If the computer has an issue or error, it may display a System Message that will help the user identify the cause and action needed to resolve the issue. If the message received is not listed in the following examples, see the documentation for either the operating system or the program that was running when the message appeared.

| Diagnostic Error Messages  | Description   |
|--|---|
| Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support.                    | The computer failed to complete the boot routine three consecutive times for the same error.                |
| System fan failure   | Possible fan failure  |
| CPU fan failure  | CPU fan has failed  |
| Hard-disk drive failure  | Possible hard disk drive failure during POST.   |
| Hard-disk drive read failure   | Possible hard disk drive failure during HDD boot test.  |
| Keyboard failure   | Keyboard failure or loose cable. If reseating the cable does not solve the problem, replace the keyboard.   |
| RTC is reset, BIOS Setup default has been loaded. Strike the F1 key to continue, F2 to run the setup utility.  | RTC Jumper may be wrongly set.  |
| No boot device available   | No bootable partition on hard disk drive, the hard disk drive cable is loose, or no bootable device exists. |
| <ul style="list-style-type: none"> <li>If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a boot device.</li> </ul> |   |

| Diagnostic Error Messages   | Description  |
|---|--|
|   | <ul style="list-style-type: none"> <li>Enter system setup and ensure that the boot sequence information is correct.</li> </ul>   |
| No timer tick interrupt   | A chip on the system board might be malfunctioning or motherboard failure  |
| USB over current error  | Disconnect the USB device. The USB device needs more power for it to function properly. Use an external power source to connect the USB device, or if the device has two USB cables, connect both of them. |
| CAUTION - Hard Drive SELF MONITORING SYSTEM has reported that a parameter has exceeded its normal operating range. Dell recommends that you back up your data regularly. A parameter out of range may or may not indicate a potential hard drive problem. | S.M.A.R.T error, possible hard disk drive failure.   |

## Diagnostic Beep Codes

No POST with three beeps is accompanied by a blinking amber power LED. All other beep codes will be accompanied by a solid white power LED. Refer to the table below for each scenario.

| Beep | Description  | Failure Coverage  |
|------|--|---|
| 1    | BIOS ROM checksum in progress or failure. BIOS Chip  | System board failure, covers BIOS corruption or ROM error |
| 2    | No RAM Detected  | Memory failure  |
| 3    | Chipset Error (North and South Bridge Chipset, DMA/IMR/Timer Error for Intel platform); Chipset Error<br><br>Time-Of-Day Clock test failure.<br><br>Gate A20 failure | System board Failure                                      |

| Beep | Description                       | Failure Coverage     |
|------|-----------------------------------|----------------------|
|      | Super I/O chip failure            |                      |
|      | Keyboard controller test failure. |                      |
| 4    | RAM Read/Write failure            | Memory failure       |
| 5    | RTC Power Fail                    | CMOS battery failure |
| 6    | Video BIOS Test Failure           | Video card failure   |
| 7    | CPU Failure                       | CPU                  |

## Diagnostic Power LED Codes

| Power LED             | Power State  |
|-----------------------|--|
| <b>OFF</b>            | Power is off or the system is in an S4 (hibernate) or S5 (Powered Off) power state. LED is blank.  |
| <b>Solid White</b>    | The computer is in power-on state.   |
| <b>Solid Amber</b>    | The system board cannot start initialization. There may be an issue with the system board, memory, processor or the power supply.                                      |
| <b>Blinking Amber</b> | The system board cannot start initialization or in an S3 (Sleep state) power state. There is a power problem, a device may be malfunctioning or incorrectly installed. |



# Technical Specifications



**NOTE:** Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information regarding the configuration of your computer, click **Start** → **Help and Support** and select the option to view information about your computer.

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## System Information

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|                   |  |
|-------------------|--|
| System Chipset    | Intel H61 Express Chipset                    |
| DMA Channels      | up to 8 MB (depending on the processor type) |
| Interrupt Levels  | ACPI IRQ 0-31                                |
| BIOS Chip (NVRAM) | 32 MB  |

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## Processor

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|             |  |
|-------------|--|
| Type        | <ul style="list-style-type: none"><li>• Intel Core i3/i5/i7 series</li><li>• Intel Pentium Dual-Core</li></ul> |
| Total Cache | up to 8 MB (depending on the processor type)   |

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## Memory

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|                |                      |
|----------------|----------------------|
| Speed          | DDR3 with 1333 MHz   |
| Connector      | two SO-DIMM slots    |
| Capacity       | 1 GB, 2 GB, and 4 GB |
| Minimum memory | 2 GB                 |
| Maximum memory | 8 GB                 |

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**Video**

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**Video Type:**

|            |  |
|------------|--|
| Integrated | Intel HD / HD 2000 / HD 3000 graphics<br>(depending on processor type) |
|------------|--|

|          |                        |
|----------|------------------------|
| Discrete | NVIDIA GeForce GT 525M |
|----------|------------------------|

**Video Memory:**

|            |                                     |
|------------|-------------------------------------|
| Integrated | up to 384 MB of shared video memory |
|------------|-------------------------------------|

|          |            |
|----------|------------|
| Discrete | up to 1 GB |
|----------|------------|

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**Display**

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|      |                   |
|------|-------------------|
| Type | 23 inches HD WLED |
|------|-------------------|

**Dimensions**

|        |                          |
|--------|--------------------------|
| Height | 312.50 mm (12.30 inches) |
|--------|--------------------------|

|       |                          |
|-------|--------------------------|
| Width | 533.70 mm (21.01 inches) |
|-------|--------------------------|

|          |                       |
|----------|-----------------------|
| Diagonal | 584.20 mm (23 inches) |
|----------|-----------------------|

|                    |             |
|--------------------|-------------|
| Maximum Resolution | 1920 x 1080 |
|--------------------|-------------|

|                 |         |
|-----------------|---------|
| Operating angle | CR > 10 |
|-----------------|---------|

|                          |       |
|--------------------------|-------|
| Horizontal viewing angle | 170 ° |
|--------------------------|-------|

|                        |       |
|------------------------|-------|
| Vertical viewing angle | 160 ° |
|------------------------|-------|

|             |                   |
|-------------|-------------------|
| Pixel pitch | 0.27 mm x 0.27 mm |
|-------------|-------------------|

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**Audio**

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|            |                   |
|------------|-------------------|
| Integrated | HD Audio with SRS |
|------------|-------------------|

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**Camera**

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|                       |   |
|-----------------------|---|
| Camera and Microphone | HD Webcam with integrated digital<br>microphone |
|-----------------------|---|

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**Communication**

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|                 |                               |
|-----------------|-------------------------------|
| Network adapter | 10/100/1000 Mbps Ethernet LAN |
|-----------------|-------------------------------|

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|                                |  |
|--------------------------------|--|
| <b>Communication</b>           |  |
| Wireless                       | internal wireless local area network (WLAN), WiFi, and Bluetooth |
| <b>Expansion Bus</b>           |  |
| Bus type                       | PCIe2.0  |
| Bus speed                      | 5.0 Gb/s   |
| <b>Expansion Cards</b>         |  |
| Mobile PCI Express Module      | WLAN & TVT Mini PCIe Module                                      |
| <b>Drives</b>                  |  |
| Externally accessible          | one 5.25 inch drive bay  |
| Internally accessible          | one 3.5 inch SATA drive bay                                      |
| <b>External Connectors</b>     |  |
| Audio:                         |  |
| Left Panel                     | two connectors for headphone and microphone                      |
| Back panel                     | one line-out connector   |
| Network                        | one RJ-45 connector  |
| USB:                           |  |
| Left panel                     | two USB 2.0 connectors   |
| Back panel                     | four USB 2.0 connectors  |
| Video                          | one VGA connector  |
| Memory card reader             | one 8-in-1 memory card reader                                    |
| <b>System Board Connectors</b> |  |
| Serial ATA                     | two  |
| Memory                         | two So-DIMM  |
| Processor fan                  | one 4-pin connector  |

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## System Board Connectors

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|            |                                       |
|------------|---------------------------------------|
| System fan | one 3-pin GPU Fan (with discrete GPU) |
| Processor  | LGA 1155-pin CPU Socket               |

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## Control Lights And Diagnostic Lights

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|                            |   |
|----------------------------|---|
| Power light                | <ul style="list-style-type: none"><li>• White light — Solid white light indicates power-on state</li><li>• Amber light — The computer is in sleep/standby mode or there might be an issue with the system board or the power supply. Blinking amber light indicates that the computer has detected an error during the Power-on self-test (POST).</li></ul> |
| Drive activity light       | <ul style="list-style-type: none"><li>• White light — Blinking white light indicates that the computer is reading data from, or writing data to the hard drive.</li></ul>   |
| Network connectivity light | <ul style="list-style-type: none"><li>• Green light — A good connection exists between the network and the computer.</li><li>• Off (no light) — The computer is not detecting a physical connection to the network.</li></ul>   |

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## AC Adapter

---

|                      |                    |       |
|----------------------|--------------------|-------|
| Input voltage        | 100 VAC to 240 VAC |       |
| Input current        | 2.3 A/2.5 A        |       |
| Input frequency      | 50 Hz to 60 Hz     |       |
| Output power         | 150 W/180 W        |       |
| Output current:      |                    |       |
| 150 W                | 7.70 A             |       |
| 180 W                | 9.23 A             |       |
| Rated output voltage | 19.5 +/- 1 VDC     |       |
| Coin-cell battery    |                    |       |
| Dimensions:          | 150 W              | 180 W |

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**AC Adapter**

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|        |                         |                         |
|--------|-------------------------|-------------------------|
| Height | 25.40 mm (1.00 inch)    | 30.00 mm (1.18 inches)  |
| Width  | 154.70 mm (6.10 inches) | 155.00 mm (6.10 inches) |
| Depth  | 76.20 mm (3.00 inches)  | 76.20 mm (3.00 inches)  |

**Temperature range:**

|           |                                    |
|-----------|------------------------------------|
| Operating | 0 °C to 40 °C (32 °F to 104 °F)    |
| Storage   | –40 °C to 70 °C (–40 °F to 158 °F) |

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**Physical**

---

|        |                          |
|--------|--------------------------|
| Height | 430.00 mm (16.93 inches) |
| Width  | 568.00 mm (22.36 inches) |

**Depth:**

|                 |                        |
|-----------------|------------------------|
| Touchscreen     | 79.00 mm (3.11 inches) |
| Non-touchscreen | 75.50 mm (2.97 inches) |

**Weight (minimum):**

|                 |                    |
|-----------------|--------------------|
| Touchscreen     | 9.35 kg (20.61 lb) |
| Non-touchscreen | 8.65 kg (19.07 lb) |

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**Environmental**

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**Temperature:**

|           |                                    |
|-----------|------------------------------------|
| Operating | 10 °C to 35 °C (50 °F to 95 °F)    |
| Storage   | –40 °C to 65 °C (–40 °F to 149 °F) |

**Relative humidity:** 20 % to 80 % (noncondensing)

**Maximum vibration:**

|               |           |
|---------------|-----------|
| Operating     | 0.26 Grms |
| Non-Operating | 2.20 Grms |

**Maximum shock:**

|           |  |
|-----------|--|
| Operating | 40 G for 2 ms with a change in velocity of 20 inches/s (51 cm/s) |
|-----------|--|

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**Environmental**

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|                            |   |
|----------------------------|---|
| Non-Operating              | 40 G for 22 ms with a change in velocity of 240 inches/s (609 cm/s) |
| Altitude:                  |   |
| Operating                  | –15.20 m to 3048 m (–50 ft to 10,000 ft)                            |
| Storage                    | –15.20 m to 10,668 m (–50 ft to 35,000 ft)                          |
| Airborne contaminant level | G1 as defined by ISA-S71.04–1985                                    |

# Contacting Dell

## Contacting Dell



**NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit **support.dell.com**.
2. Select your support category.
3. If you are not a U.S. customer, select your country code at the bottom of the page, or select **All** to see more choices.
4. Select the appropriate service or support link based on your need.